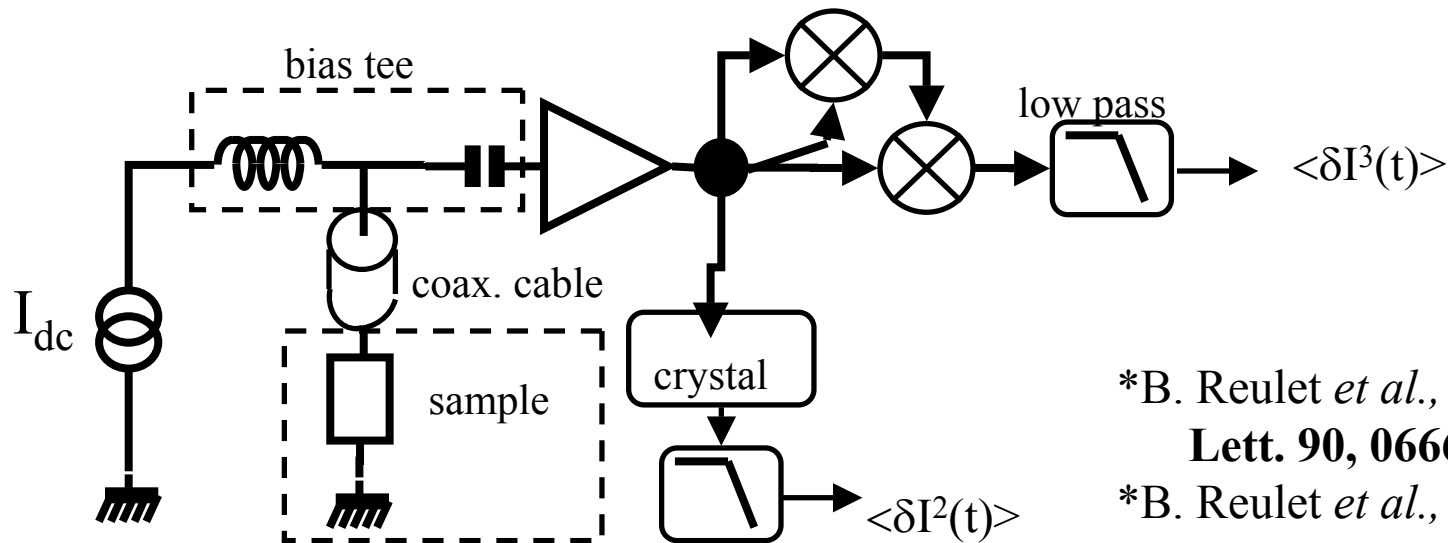


Measurement of Quantum Noise in Nanosystems

Daniel Prober, Yale Univ. DMR-0072022



*B. Reulet *et al.*, Phys. Rev. Lett. 90, 066601 (2003).

*B. Reulet *et al.*, Phys. Rev. Lett., to appear, fall, 2003.

- **Noise** gives information on conduction processes
- Demonstration of the **phase dependent effective charge** of the carriers
- First measurement of the **third moment of current fluctuations**, $\langle (I - I_{dc})^3 \rangle$
- Huge effect of the electromagnetic environment revealed by $\langle \delta I^3 \rangle$
- Future experiments - single-wall carbon nanotubes.

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Education:

Four undergraduates and two graduate students contributed. The two grad students are now both postdoctoral researchers (at Yale), studying quantum computing. Two of the undergrads are grad students in physics (at Harvard), one is working, and the fourth will apply to graduate school.

Outreach:

The PI lead a seminar for public school teachers on ‘Physics in Everyday Life’ sponsored by Yale-New Haven Teacher’s Institute. Curricula developed are now being taught in the schools, grades 2 - high school.